

5.0 AUTOMOTIVE REPAIR SHOPS

Automotive repair facilities include:

- Service stations;
- Vehicle fleet maintenance facilities;
- Auto dealerships; and
- Car washes.

These facilities can directly and indirectly impact drinking water supplies including water supply wells and surface water supplies (streams, lakes and reservoirs). Auto repair facilities create a variety of wastes, including hazardous wastes. These include petroleum products, degreasing solvents, metals, battery electrolytes, and paints and thinners. Other materials that come in contact with these hazardous materials can in turn pose a risk of pollution themselves. Examples include materials used to contain spills, cleaning rags, and rinse water used to wash floors. Car washes use detergents and waxes, and dispose of large quantities of wash water that contain these substances as well as petroleum products on the exterior and underbody of vehicles. For all these businesses, protecting drinking water supplies means controlling both the hazardous substances and the materials with which they come in contact.

Floor drains connected to drywells have typically been used to dispose of automotive fuels or petroleum by-products. These systems, known as Class V underground injection control wells (UICs), have been identified as potential sources of drinking water contaminations. However, the federal Safe Drinking Water Act (SDWA) prohibits any injection activity that may endanger an underground source of drinking water. Pursuant to the SDWA, EPA recently enacted new minimum federal requirements for motor vehicle waste disposal wells that became effective in April, 2000. The rule is aimed at phasing out existing wells in source water protection areas. The Class V rule is linked to EPA's Source Water Assessment Program. For further information on this topic, see the EPA UIC website referenced in chapter 7. Such disposal wells can be especially problematic if they discharge in a source water protection area (watershed or wellhead protection area) or near a private drinking water well. Existing auto and vehicle repair businesses that opt to keep their underground injection wells through the State UIC program should adopt practices that minimize the risks of spills and drips that could lead to fluid discharge to the well. For the remaining businesses without dry wells, many of these same practices will reduce the potential for spills and maintain a clean shop. New businesses within such water protection areas must use other approved methods of disposal of wash water and other lightly contaminated materials. Used solvents must be sent to a solvent recycling facility (typically the provider of solvents will also accept used solvents for recycling and reuse). Heavily contaminated materials must be sent to a hazardous waste treatment facility.

5.1 Best Management Practices For Automotive Repair Shops

Best Management Practices for Auto Repair Shops are utilized to manage and control wastes generated by these and related facilities to minimize or prevent releases to the environment. During normal vehicle repair and maintenance activities, vehicle fluids may drip or spill or otherwise enter floor drains or sinks in service areas. Following the practices and using the equipment described in the BMPs below (and additional referenced resources) will help your facility conduct business in a way that protects drinking water.

- ***Running a Dry Shop.*** This management approach involves minimizing wastewater produced by a shop through a variety of techniques. Some of the most prominent practices are as following ways:
 - Prevent spills from ever reaching the shop floor by installing secondary containment in storage areas; using safety cans, drip pans and trays, and funnel drum covers when transferring fluids; and installing bulk, pressurized, overhead fluid delivery systems, where appropriate.
 - Immediate cleanup of spills can be promoted if employees carry rags for small spills; clean with reusable cloth rags; use absorbent materials such as hydrophobic mops to remove medium-size or larger spills; wring out absorbed fluids into suitable containers for reuse or recycling; and carefully mark and make available all spill cleanup material.
 - Keep the floor clean and dry by sweeping every day; using only a damp mop for general cleanups; never hosing work areas; and sealing the shop floor with impervious materials, if possible.



Examples of commercially available secondary containment systems

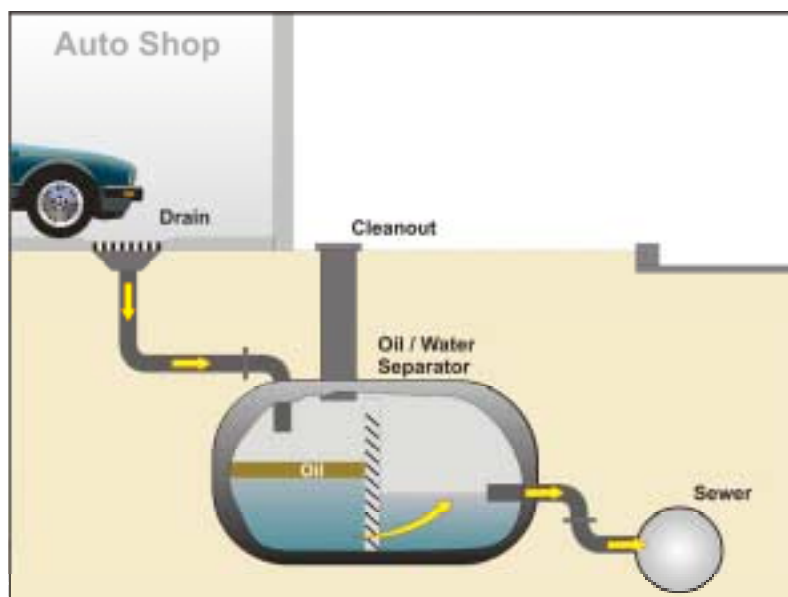
(Source: www.labsafety.com)



Examples of commercially available spill control kits

(Source: www.labsafety.com)

- Connecting Floor Drains to Holding Tanks or Sanitary Sewer.** This BMP provides an appropriate method to dispose of potentially contaminated wash water through floor drains, if it is not possible to eliminate the use of water altogether. If using an above ground or underground holding tank, make sure it meets all federal, state, and local requirements; monitor the fluid level and schedule regular pump-outs by certified waste haulers; and check for leaks and drips on a regular basis. If connecting floor drains to a municipal sanitary sewer, make sure the hookup is legal and approved by the local sewage treatment plant; do not connect floor drains to a storm drain or storm sewer; and discharge only allowable wastewater to the sanitary sewer.



Schematic of a floor drain and oil water separator system

- ***Substitution of Carburetor Cleaners Containing Chlorinated Compounds.*** These compounds are considered hazardous. Their use and potential threat to drinking water supplies can be reduced by:
 - Determining if non-hazardous carburetor cleaners can be substituted;
 - Segregating carburetor cleaner from other wastes;
 - Infrequent use without spray dispensers (to minimize VOC's export to the atmosphere);
 - Saving and adding parts for single cleaning batches in heavy parts cleaning; and
 - Distillation with other solvents.

- ***Managing Parts-Washing Solvent Wastes.*** These strategies are designed to minimize and properly manage solvent wastes that result from the cleaning of parts needed for repair work. Reduction recommendations include:
 - More efficient use;
 - Alternative cleaning; and
 - Distillation.

- ***Managing Oil Waste Streams.*** This BMP employs techniques to handle and manage new and used oil that includes oil filters and absorbents. Best Management Practices for waste oil include:
 - Catching oil dripping from parts, transfer funnels, and vehicles in drip pans; and
 - Keeping used oil in separate secure containers that are clearly marked.

- ***Managing solid wastes including 55-Gallon Steel Drums.*** This strategy is applied to manage and properly dispose of various solid and liquid wastes being reused and recycled. The services of a reliable and dependable supplier will be necessary. BMPs for drums being used or collected include:
 - Drums should be empty, with no residual materials inside, outside, or on the top;
 - Drums should be structurally sound, without big dents or rust;
 - Drums should be located in areas clearly visible to prevent damage from motor vehicles;
 - Open head drums should be covered with lids sealed by heavy-duty bolt clamps, snap rings, or bungs;
 - Drums should be placed off the ground or on an impermeable surface in a covered containment area to prevent corrosion and discharges to ground water;

- Drums should be stored away from the eaves of a roof and any heat sources;
 - Drums should be located away from wetlands, surface water, wells, property lines, flood zones, and drainage areas;
 - Drums should not be covered with other materials where they may become forgotten, knocked over, or develop unseen leaks;
 - Drums being used should be labeled and face “out” so as to be easily read, and accessible year round in case of fire, removal, or spills; and
 - Drums should be regularly inspected for structural integrity (rust, cracks, leaks, etc.).
- ***Training Your Employees and Yourself.*** This management strategy involves the implementing a series of practices to generate less waste through effective employee training. Employees should be educated about the benefits of preventing pollution on the shop floor; know about Material Safety Data Sheets (MSDSs); be re-trained periodically to keep good practices in mind; and to be informed of new regulatory requirements.



Accessible material safety data sheets (MSDSs) & eye-wash stations
(Source: www.labsafety.com)

Effective Communication. This basic shop practice involves reminding employees about pollution prevention, spill avoidance and control procedures, and emergency response information through the effective use of signs, posters, and other techniques.

Keeping Good Records. This BMP and fundamental business management function is important in order to track pollution prevention efforts and other benefits of using BMPs. Facility plans and permits should be regularly updated. Supply inventory, waste disposal, and recycling records should be maintained to track materials used and savings linked to reduction of wastes and progress of efforts to prevent pollution.

5.2 Case Study: Van Batenburg's Garage, Worcester, Massachusetts

a) Background

Craig Van Batenburg owns and operates an auto repair garage in Worcester, Massachusetts, which includes many service features to control fluids and prevent spills. These services include recycling waste oil, antifreeze and filters through innovative systems. Although the garage is located outside of a wellhead protection area for a backup well for the City of Worcester, the garage owner educates many area automotive technicians about proper fluid and hazardous waste handling operations through a regional automotive repair education association.

Some of the basic management measures implemented and encouraged by the Van Batenburg Garage which protect nearby ground waters and surface waters that may serve as drinking water supplies are:

b) Management Measures Applied at Van Batenburg's Garage

BMP: Recycling Service for Used Motor Oil, Oil Filters and Antifreeze

Evaluation Question: Does your automotive repair operation recycle used oil as well as used oil filters?

Performance: Waste fluids from improper disposal of used oil and oil filters combines with other chemicals to contaminate ground water when disposed of in most landfills. The Van Batenburg Garage drains oil filters for 2-5 days into a collection system, then crushes the filters and sends them for recycling. Used motor oil from the drained filters is combined with the used oil from automobiles and pumped directly to an on-site oil burner.

A technician performs antifreeze recycling after initially testing the antifreeze by directly pumping radiators through a mobile pump station. By directly pumping antifreeze through this system, no spillage occurs. This service procedure is similar to an air conditioning service system.



Oil filters draining into a Collection System



A Technician tests antifreeze at a mobile pump station that is connected directly to the vehicle's radiator. The antifreeze will be recycled.

BMP: *Fluids Management and Spill Response*

Evaluation Question: Does your automotive repair operation have a formal system for managing fluids and a plan for responding to a potential fluid spill?

Performance: Van Batenburg's Garage clearly labels and color-codes all containers for raw and used fluids. By carefully coding containers and training its staff to know about fluid management and proper spill prevention techniques, the garage protects the personal safety of its employees, generates less waste and protects itself from fire and spills.

All fluid containers are labeled by color to ensure employees do not accidentally combine different fluids. To avoid spills, the garage uses direct pumping or drip pans that drain directly to a collection system. Spill cleanup equipment using absorbent materials is available in each service bay for easier response. Absorbent materials (pads, mats, hydrophobic mops, and floor sweeps) are used to remove medium-size or larger spills.

All fluid transfers are conducted within service bay areas, not outside. All Material Safety Data Sheets (MSDS) are located in an accessible location for employees.

BMP: *Lead Battery Disposal*

Evaluation Question: Does your automotive repair operation recycle used lead batteries?

Performance: Lead contained in used batteries represents almost 80% of the total domestic lead consumption in the US. Improper disposal of automotive batteries can help lead migrate into ground waters. Many states require that automotive service facilities recycle lead batteries. By collecting the batteries and returning them to an authorized battery manufacturer or an EPA-authorized collection or recycling facility, the service facility is helping to remove the threat of lead pollution to ground waters.

BMP: *Floor Drain Removal or Proper Floor Drain Construction*

Evaluation Question: Does your facility have a floor drain which discharges to the ground or septic system?

Performance: Some automotive service stations may drain their service bay areas through a floor drain. While different federal, state, and local regulations apply to the construction and maintenance of these floor drains, those drains that serve as a direct conduit to the ground water may contaminate ground water supplies.

Sealing the Drain: EPA and many states' programs, which regulate floor drains through Underground Injection Well (UIC) programs, require connecting to a wastewater treatment plan or approved holding tank. Approval is often required *before* sealing the drain. Please refer to your EPA or state UIC program for more information. Some states

may ban motor vehicle waste disposal wells while others may decide to apply the new motor vehicle waste disposal well requirements statewide. Other states may also allow the business to apply for a waiver.

Other options: For operations such as car washes, wastewater recirculating systems may be an option that reduces or eliminates wash water discharges. Wash water from motor vehicles may often contain oil and grease as well as other motor vehicle fluids.

BMP: *Vehicle Washing Activities*

Evaluation Question: Does your business avoid washing vehicles where wash water may be disposed of near sensitive ground water areas and surface waters via drain to nearby stormwater collection systems (storm drains)? If so, does your facility treat this wash water and storm drain sediment prior to discharge?

Performance: If your facility performs outdoor vehicle washing, you should use berms to collect wastewater and run wastewater through an oil and water separator. Oil-water separators (sometimes called oil or grease traps) separate oil and grit from water. Make sure that you maintain your oil-water separator by removing floating oil and collected sludge.

Additional options for your business include minimizing the amount of water used for washing through new technologies. Recirculating wash water equipment is currently available. By washing in enclosed facilities with recirculating systems, your business will reduce water consumption and prevent direct discharge of wash water to sensitive ground water areas such as wellhead protection areas and surface waters.

c) Conclusions

By implementing Best Management Practices that include recycling waste fluids and used lead batteries, clearly color-coding fluid containers, training staff in fluid management and spill prevention strategies, and participating in educational outreach through a regional automotive repair education association, Van Batenburg's garage works on several fronts to protect ground water quality in western Massachusetts.

d) Additional Resources

City of Worcester

455 Main Street

Worcester, MA 01608

Phone: (508) 799-1175

Email (City Manager): citymanager@ci.worcester.ma.us

Van Batenburg's Garage, Inc.

24 Wells Street

Worcester, MA 01608

Phone: (508) 753-2431

Worcester County Conservation District

Medical Arts Center Building

52 Boyden Road, Room 100

Holden, MA 01520-2587

Phone: (508) 829-4477

5.3 Self-Evaluation Questionnaire for Auto Repair Shops, Fuel Service Stations and Car Washes

The following Self-Evaluation Questions are intended to help you, the owner of an automotive repair shop or other business dealing with automobiles or other vehicles, to determine whether you are conducting your business in a manner which protects drinking water.

Do You Know Your Source of Drinking Water?

Do you know the name and location of your source of drinking water? Yes ____ No ____

Do you know whether this is a public or private drinking water source? Yes ____ No ____

Do you know the type of drinking water source (e.g., is it a well that draws on ground water, or is it a surface water source such as a reservoir, lake, river or stream)? Yes ____ No ____

What is the distance from your business to the drinking water supply? ____Feet ____Miles

What is the distance from your business to any tributary stream or river? ____Feet ____Miles

What is the distance from your business to any Wellhead Protection Area?
____Feet ____Miles

Water Quality and Prevention of Pollution

Do you know of any water quality concerns for your public drinking water supply?
Yes ____ No ____

Does your facility treat for any wash water, non-human sewage wastewater, or stormwater to improve water quality? Yes ____ No ____

Have You Had Contact With Your Water Supplier?

Have you ever contacted your local drinking water supplier about your business's potential to affect the water supply? Yes ___ No ___

Have You Had Contact With Your State Source Water Assessment Program?

Has your state Source Water Assessment water supplier contacted your business about your facility's potential to affect a water supply? Yes ___ No ___

Do You Know the Contaminant Characteristics of Materials You Are Working With?

Toxic characteristics of a material means the ability of a material to cause toxic or other adverse reactions in humans or other living organisms. Descriptions of toxicity or precautions to take when handling these materials can be found on the product packaging or with materials that are provided by the supplier and/or the manufacturer.

Do you know the toxic characteristics of the materials your business uses? Yes ___ No ___

Are Materials Data Safety Sheets (MSDSs) provided for all the hazardous materials kept on the property (the federal Occupational Safety and Health Administration, or OSHA, requires that these be kept and made available to employees)? Yes ___ No ___

Minimize Waste In Order To Minimize Pollution

One of the most effective ways to prevent pollution is to reduce the amount of liquid or solid waste which a business generates. Reducing the amount of waste generated means that there is less waste to dispose of. Less disposal of waste generally translates into less pollution at the waste disposal site, and therefore less of a possibility for polluting ground water, surface water and drinking water supplies. Whether the waste is paper, metals, petroleum products, chemicals, inert materials, soil, or other materials, minimizing waste is always a good idea.

Does your business minimize the amount of waste produced? Yes ___ No ___

Has the site been designed to reduce contact between stormwater flows and work-related surfaces? Yes ___ No ___

Are vehicles parked away from sensitive areas? Surface waters, ground water protection areas, wellhead protection areas? Yes ___ No ___

Do you avoid hosing down work areas, which results in contaminating large amounts of water that must then be properly disposed of? Yes ___ No ___

Do you use any measures (e.g., low-flow hose nozzles or nozzles fitted with a pistol grip, etc.) to minimize wash water used? Yes ___ No ___

Are employees provided with reusable cloth rags rather than paper towels?
Yes ___ No ___

Good Housekeeping

Are all hazardous materials stored in a safe manner, as specified in the instructions on the product packaging? Yes ___ No ___

Is the floor kept clean and dry to prevent buildup of contaminants and dirt, and the sweepings properly disposed? Yes ___ No ___

Are there safety receptacles for disposal of used dirty rags and other materials, and are these properly disposed? Yes ___ No ___

Are all hazardous materials stored in a manner that prevents spillage, prevents rain or snow from falling on them, and are they clearly labeled? Yes ___ No ___

Have you closed any underground injection wells (floor drains or pits hydraulically connected to the ground) or do you have any underground injection wells permitted by your state? Yes ___ No ___

Inspections and Safety Checks

Are regular inspections, safety checks and monitoring of conditions carried out and the results written down in a logbook or other means of permanent documentation?
Yes ___ No ___

Keeping Good Records

Are good accurate records kept of all hazardous materials bought, stored and used, and their expiration dates, if any? Yes ___ No ___

Are good accurate records kept concerning disposal or recycling of materials, which describe who, what, when, why and where the material was disposed?
Yes ___ No ___

Training Your Employees and Yourself

Are all employees, including yourself, trained in ways of preventing pollution and spillage, safe and legal disposal methods, reporting of spills, quickly and effectively communicating problems to management, and in worker safety and public health?

Yes ____ No ____

Is such training done on a regular basis? Yes ____ No ____

Unintentional Activities and Spill Prevention

Are there any staff or customer activities which could unintentionally cause pollution or a spill to occur? Examples in the automotive repair business could include accidental spillage of fuel or other hazardous materials, or not following proper Best Management Practices (BMPs) to prevent pollution. Yes ____ No ____

Is your local drinking water supplier aware of your facility's spill response, prevention and control plan? Yes ____ No ____

Is notifying the local drinking water supplier, and the number of that supplier, part of your response or contingency plan? Yes ____ No ____

Other Physical, Structural, and Managerial Practices to Minimize Pollution and Spills

Are floor drains connected to holding tanks and are tanks in good condition (e.g., not leaking)? Yes ____ No ____

Is the business run as a "dry shop" (i.e., a shop that has sealed all its floor drains)? This greatly lowers the amount of floor water volume and contamination.

Yes ____ No ____

Are spills prevented from ever reaching the floor (through use of drip pans and trays under vehicles, use of funnel drum covers, fluid delivery systems that reduce spills and increase work efficiency)? Yes ____ No ____

Do you have a plan that shows all floor drains, pipes, cleanup equipment, areas for storage of hazardous materials, fire safety and control equipment, and waste disposal bins?

Yes ____ No ____

Are job responsibilities clearly defined so that specific individuals are responsible for ensuring that pollution prevention measures are carried out? Yes ____ No ____

Emergency Plans

Is there a spill or cleanup plan already developed, and are all staff, including yourself, trained to conduct such an emergency spill or cleanup plan immediately? Are all the materials required for such a spill or cleanup available and in good condition?

Yes ____ No ____

Does your business have adequate funding, staff, or other resources needed to conduct all BMPs recommended? Yes ____ No ____

Assessment Results

If you have answered yes to most or all of these questions, congratulations! You are probably conducting your auto repair or fuel service station business in a manner that helps to protect our drinking water.

If many of your answers are no, or you have questions concerning these measures, please study the BMPs in this section closely. Also look at the Case Studies for specific examples of auto repair or service station business BMPs that have been used.